Entergy Nuclear Operations, Inc.
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Anthony J. Vitale
Site Vice President

PNP 2011-012

February 13, 2012

U. S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Washington, DC 20555-0001

SUBJECT: Reactor Protection System and Auxiliary Feedwater System Actuation
Palisades Nuclear Plant
Docket 50-255
License No. DPR-20

Dear Sir or Madam:

Licensee Event Report (LER) 2011-008 is enclosed. The LER describes a manual actuation of the reactor protection system and an automatic actuation of the auxiliary feedwater system. The occurrence is reportable in accordance with 10 CFR 50.73(a)(2)(iv)(A).

This letter contains no new commitments and no revisions to existing commitments.

Sincerely,

ajv/tad

Attachment: LER 2011-008, Reactor Protection System and Auxiliary Feedwater System Actuation

CC Administrator, Region III, USNRC
Project Manager, Palisades, USNRC
Resident Inspector, Palisades, USNRC

ATTACHMENT

LER 2011-008

REACTOR PROTECTION SYSTEM AND AUXILIARY FEEDWATER SYSTEM ACTUATION

3 Pages Follow

NRC FORM 366
U.S. NUCLEAR REGULATORY COMMISSION
(10-2010)

LICENSEE EVENT REPORT (LER)

(See reverse for required number of digits/characters for each block)

APPROVED BY OMB NO. 3150-0104 EXPIRES 10/31/2013

Estimated burden per response to comply with this mandatory information collection request: 80 hours. Reported lessons learned are incorporated into the licensing process and fed back to industry. Send comments regarding burden estimate to the Records Management Branch (T-6 E6), U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, or by internet e-mail to bjs1@nrc.gov, and to the Desk Officer, Office of Information and Regulatory Affairs, NEOB-10202 (3150-0104), Office of Management and Budget, Washington, DC 20503. If a means used to impose information collection does not display a currently valid OMB control number, the NRC may not conduct or sponsor, and a person is not required to respond to, the information collection.

1. FACILITY NAME	2. DOCKET NUMBER	3. PAGE
PALISADES NUCLEAR PLANT	05000255	1 OF 3

4. TITLE

Reactor Protection System and Auxiliary Feedwater System Actuation

5. EVENT DATE			6. LER NUMBER			7. REPORT DATE			8. OTHER FACILITIES INVOLVED	
MONTH	DAY	YEAR	YEAR	SEQUENTIAL NUMBER	REV NO	MONTH	DAY	YEAR	FACILITY NAME	DOCKET NUMBER
12	14	2011	2011	- 008 -	00	02	13	2012	FACILITY NAME	DOCKET NUMBER

9. OPERATING MODE

1

10. POWER LEVEL

100

11. THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check all that apply)

☐ 20.2201(b)	☐ 20.2203(a)(3)(i)	☐ 50.73(a)(2)(i)(C)	☐ 50.73(a)(2)(vii)
☐ 20.2201(d)	☐ 20.2203(a)(3)(ii)	☐ 50.73(a)(2)(ii)(A)	☐ 50.73(a)(2)(viii)(A)
☐ 20.2203(a)(1)	☐ 20.2203(a)(4)	☐ 50.73(a)(2)(ii)(B)	☐ 50.73(a)(2)(viii)(B)
☐ 20.2203(a)(2)(i)	☐ 50.36(c)(1)(i)(A)	☐ 50.73(a)(2)(iii)	☐ 50.73(a)(2)(ix)(A)
☐ 20.2203(a)(2)(ii)	☐ 50.36(c)(1)(ii)(A)	☒ 50.73(a)(2)(iv)(A)	☐ 50.73(a)(2)(x)
☐ 20.2203(a)(2)(iii)	☐ 50.36(c)(2)	☐ 50.73(a)(2)(v)(A)	☐ 73.71(a)(4)
☐ 20.2203(a)(2)(iv)	☐ 50.46(a)(3)(ii)	☐ 50.73(a)(2)(v)(B)	☐ 73.71(a)(5)
☐ 20.2203(a)(2)(v)	☐ 50.73(a)(2)(i)(A)	☐ 50.73(a)(2)(v)(C)	☐ OTHER Specify in Abstract below or in NRC Form 366A
☐ 20.2203(a)(2)(vi)	☐ 50.73(a)(2)(i)(B)	☐ 50.73(a)(2)(v)(D)	

12. LICENSEE CONTACT FOR THIS LER

FACILITY NAME	TELEPHONE NUMBER (Include Area Code)
Terry Davis	(269) 764-2117

13. COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT

CAUSE	SYSTEM	COMPONENT	MANU-FACTURER	REPORTABLE TO EPIX	CAUSE	SYSTEM	COMPONENT	MANU-FACTURER	REPORTABLE TO EPIX
D	SJ	FUB	B569	Y					

14. SUPPLEMENTAL REPORT EXPECTED

☐ YES (If yes, complete 15. EXPECTED SUBMISSION DATE) ☒ NO

15. EXPECTED SUBMISSION DATE	MONTH	DAY	YEAR

ABSTRACT (Limit to 1400 spaces, i.e., approximately 15 single-spaced typewritten lines)

On December 14, 2011, main feedwater (MFW) pumps, P-1A and P-1B, tripped due the loss of suction pressure. Operators entered the loss of MFW procedure and appropriately carried out the procedurally directed action to manually trip the reactor. As expected, the auxiliary feedwater system started automatically to recover level in the steam generators.

The immediate cause for the loss of suction pressure to the MFW pumps was the spurious opening of MFW pump, P-1A, recirculation control valve, CV-0711. The spurious opening of CV-0711 resulted from a loss of electrical control power to the valve. The loss of electrical control power to CV-0711 was due to insufficient contact between the fuse holder clip and a fuse ferrule within a fuse block assembly of the control power circuitry. The possible causes for the lack of sufficient contact between the fuse holder clip and the fuse ferrule were the stretching of the fuse holder clip during the installation/removal of a fuse tag-out device, and/or fatigue of the fuse holder clip, induced by the repetitive removal/installation of the fuse.

The control power circuitry, for CV-0711, was rerouted through an acceptable spare fuse block assembly and reenergized. The event is reportable in accordance with 10 CFR 50.73(a)(2)(iv)(A) as an event that resulted in a manual actuation of the reactor protection system and the automatic actuation auxiliary feedwater system.

EVENT DESCRIPTION

On December 14, 2011, with the plant in Mode 1 at 100% power, main feedwater (MFW) pumps, P-1A and P-1B [P;SJ], tripped due the loss of suction pressure. Operators entered the loss of MFW procedure and appropriately carried out the procedurally directed action for a loss of both MFW pumps, which is to manually trip the reactor [RCT;AB]. As expected, the auxiliary feedwater system [BA] started automatically to recover level in the steam generators [SG;SB].

The event is reportable in accordance with 10 CFR 50.73(a)(2)(iv)(A) as an event that resulted in a manual actuation of the reactor protection system [JC] and the automatic actuation auxiliary feedwater system.

CAUSE OF THE EVENT

For pump protection, both MFW pumps have minimum flow requirements. This minimum flow is maintained automatically by providing MFW flow through recirculation control valves, CV-0710 (P-1B) and CV-0711 (P-1A), which control recirculation flow back to the main condenser. Both CV-0710 and CV-0711 are designed such that a loss of instrument control air or electrical control power will cause the recirculation control valves to fully open. During normal operation, both recirculation control valves are in the closed position. MFW flow from the MFW pumps discharge to the steam generators through MFW regulating valves. The speed of the MFW pumps, and the modulation of the MFW regulating valves to control steam generator levels, is automated from the MFW level control system.

The immediate cause for the loss of suction pressure to the MFW pumps was the spurious opening of MFW pump, P-1A, recirculation control valve, CV-0711. Due to the discharge piping of the MFW pumps containing an open cross connection, the spurious opening of CV-0711 affected both trains of MFW. The MFW level control system responded to the excess flow through CV-0711, as designed, by raising the speed of the MFW pumps and modulating the MFW regulating valves further open to maintain steam generator levels within the normal operating band.

Operators entered the off-normal procedure for a loss of MFW and took manual actions to stabilize the MFW system. Due to the combined effects of the excess discharge flow through CV-0711 to the main condenser, and additional discharge flow from the MFW pumps required to maintain steam generator levels within the normal operating range, suction pressure to the MFW pumps continued to lower to their trip setpoint.

The spurious opening of recirculation control valve, CV-0711, resulted from a loss of electrical control power to the valve. The loss of electrical control power to CV-0711 was due to insufficient contact between the fuse holder clip and a fuse ferrule within a fuse block assembly of the control power circuitry. The possible causes for the lack of sufficient contact between

the fuse holder clip and the fuse ferrule were the stretching of the fuse holder clip during the installation/removal of a fuse tag-out device, and/or fatigue of the fuse holder clip, induced by the repetitive removal/installation of the fuse.

CORRECTIVE ACTIONS TAKEN

The control power circuitry, for CV-0711, was rerouted through an acceptable spare fuse block assembly and reenergized. The fuses in the control power circuitry for CV-0711, installed at the time of the event, were analyzed and found acceptable. The fuse holder clip and fuse ferrules associated with the MFW pump, P-1B, recirculation control valve, CV-0710, were examined for a possible common mode failure mechanism and found acceptable.

CORRECTIVE ACTIONS TO BE TAKEN

The procedures and training associated with the installation/removal of fuses and tag-out devices will be evaluated and revised, as necessary, to mitigate similar future occurrences.

ASSESSMENT OF SAFETY CONSEQUENCES

The event is considered to be of very low safety significance. All safety systems functioned as expected.

PREVIOUS SIMILAR EVENTS

None